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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,161	07/25/2006	Andreas Habich	12810-00317-US	5289
23416 7590 09/15/2009 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899				
EXAMINER				
BADR, HAMID R				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
09/15/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/587,161

**Applicant(s)**

HABICH ET AL.

**Examiner**

HAMID R. BADR

**Art Unit**

1794

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22, 25, 26 and 34-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22, 25, 26 and 34-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)  
Paper No(s)/Mail Date 7/25/2006, 8/15/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9, 11-20, 25-26, 34-38, 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bewert et al. (5,318,903; hereinafter R1) in view of Bedford et al. (2000, Enzymes in Farm Animal Nutrition; hereinafter R2) and Couteau et al. (2001, Effect of the presence of gum arabic on the thermostability of thaumatin; hereinafter R3).
3. R1 discloses a process for the production of dry, free flowing enzyme preparations by spraying aqueous enzyme dispersions which may contain additives. (Abstract).
4. R1 discloses that the enzyme dispersions to be converted into dry, stable enzyme preparations which can be employed in the food and animal feed industries. (Col. 1, lines 46-49). R1 discloses that the enzymes (including phytase) used may be of animal, plant, and microbial origin. (Col. 2, lines 1-9)
5. R1 discloses mixing an aqueous phytase with soybean meal and water. The resulting suspension is sprayed and the moist product is dried in a fluidized bed. The activity of phytase in the product is 350 FTU/g. (Col. 3, Example 1).

6. It is noted that the activity of phytase in the final product depends on the initial input activity, therefore; at higher input activity of phytase, the final product can be produced to contain higher phytase units per gram as presently claimed.
7. Given that soybean meal is used for making the enzyme dispersion, it is clear that the phytase enzyme will be in association with plant carbohydrates (e.g. starch) and proteins (soybean protein). Liquid enzyme preparations containing phytase are also known and prepared in the art.
8. R1 is silent regarding the thermal stability of the phytase in phytase preparations. R1 is also silent regarding the inclusion of gum arabic as a stabilizing agent in the enzyme formulation.
9. R2 discloses the thermal stability of phytase and states that depending on the enzyme source the thermal stability can vary between 45C to 77C. (paragraphs under phytase, paragraphs 1, 2). R2 discloses that the interaction of the enzyme with the feed matrix will protect the enzyme from steam or elevated temperature. Further, R2 teaches that measuring phytase activity in pelleted feed provides a more accurate evaluation of the commercial importance of inactivation. (paragraph 3).
10. Other processing methods such as extrusion (low and high pressure), granulation, agglomeration, spheronization and drum granulation for the production of pellets or granules containing enzymes including phytase are also known in the art. Mixing and kneading the enzyme with the solid carrier and the stabilizing agent are also known processes in the art.

11. R2 discloses that thermal protection of available exogenous enzymes by encapsulation or granulation provides a solution at present. (paragraph 5).
12. R2 is silent regarding the inclusion of gum Arabic as a stabilizing agent in the enzyme preparations.
13. R3 investigates the effect of gum Arabic on the thermostability of thaumatin at 50C, 70C and 90C (Introduction and Materials and Methods). Thaumatin is a plant protein which is used as a natural sweetener. (Introduction, end of second paragraph).
14. R3 discloses that the presence of gum Arabic can increase conservation of this natural sweetener. The percentage increase in stability of thaumatin by the addition of gum Arabic is 20%.
15. R1 and R2 disclose that an enzyme such as phytase can interact with feed components including carbohydrates and proteins and that this interaction can protect the enzyme from thermal denaturation that the enzyme encounters upon pelleting or thermal processing. R3 discloses that gum Arabic can give thermal protection to heat sensitive proteins exemplified by thaumatin. Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate phytase in animal feed to take advantage of the protection offered by carbohydrates and proteins contained in the feed and further add gum Arabic as a stabilizing agent as disclosed by R3. One would do so to protect phytase, added to the food or feed, from thermal stress encountered during processing such as pelleting, drying or granulation. Absent any evidence to contrary and based on the combined teachings of the cited

references, there would have been a reasonable expectation of success in making pellets or granules containing active phytase.

16. Claims 10 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over R1-R3 as applied above, further in view of Harz et al. (US 7,556,802; hereinafter R4).

17. R1-R3 are silent regarding coating enzyme containing granules.

18. R4 discloses a process for producing a polymer coated , granulated, enzyme containing feedstuff additive and pelleted feedstuff compositions which are produced with the polymer coated additives. (Abstract).

19. R4 discloses the granulation process comprising slurring the mass to be granulated, extrusion, spheronising, and drying. (col. 2, lines 53-66).

20. R4 discloses the coating of a phytase containing granule. (Col. 9, Example 2).

21. Therefore, it would have been obvious to make phytase containing granules and coat them as taught by R4. One would do so to protect the phytase containing granules against moisture.

22. Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over R1-R3 as applied above, further in view of Cheng et al. (US 5,985,605; hereinafter R5) and Andela et al. (US 2003/0054511; hereinafter R6).

23. R1-R3 are silent regarding promoting the growth of an animal by using phytase containing food or fee.

24. R5 discloses a method for improving phosphorus utilization by the animal by feeding an effective amount of phytase. Phytate phosphorus utilization may be

evidenced by, for instance improved animal growth as presently claimed. (Col. 4, lines 46-54).

25. R5 is silent regarding the feed conversion rate when phytase is used in the feed.

26. R6 discloses methods for improving the feed conversion rate by reducing the anti-nutritional effects of certain feed compounds. Feed enzymes such as phytase may also be used to reduce the amount of compounds which are harmful to the environment. Given that phytates are anti-nutritional factors in animal feed and knowing the function of phytase in hydrolyzing the phytates, inclusion of phytase in animal feed with the concomitant improvement in the feed conversion rate would have been obvious to an artisan.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAMID R. BADR whose telephone number is (571)270-3455. The examiner can normally be reached on M-F, 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hamid R Badr  
Examiner  
Art Unit 1794

/KEITH D. HENDRICKS/  
Supervisory Patent Examiner, Art Unit 1794